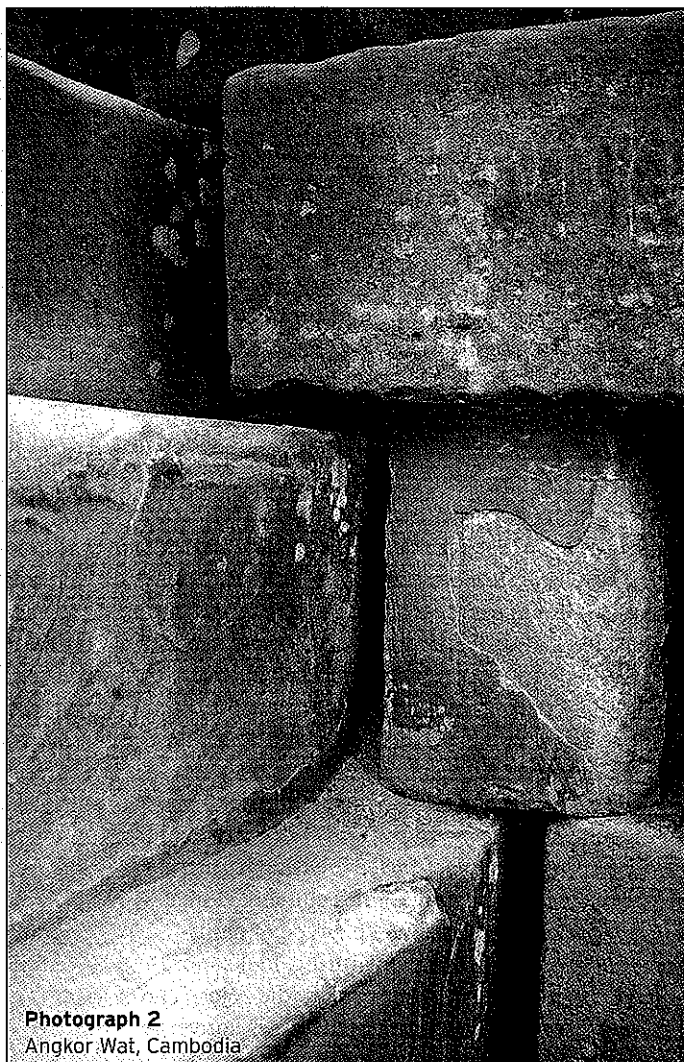


Photograph 1



Photograph 2
Angkor Wat, Cambodia

"Mathematical Lens" uses photographs as a springboard for mathematical inquiry. The goal of this department is to encourage readers to see patterns and relationships that they can think about and extend in a mathematically playful way.

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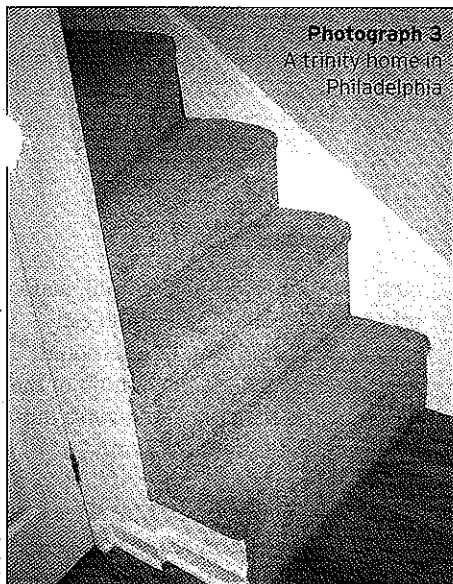
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Ron Lancaster, one of the editors of this column, visited Angkor Wat, Cambodia, in March 2003. Along with other visitors to a shrine for the Buddha (**photograph 1**), Ron had difficulty descending the very steep steps. According to religious custom, one is not allowed to turn one's back to the Buddha at the top of the steps. Thus, the steps are designed so that it is not possible to walk down them facing forward, with one's back to the statue. One must either descend sideways, as the young boy is doing, or facing the steps, as one often does when going down a ladder.

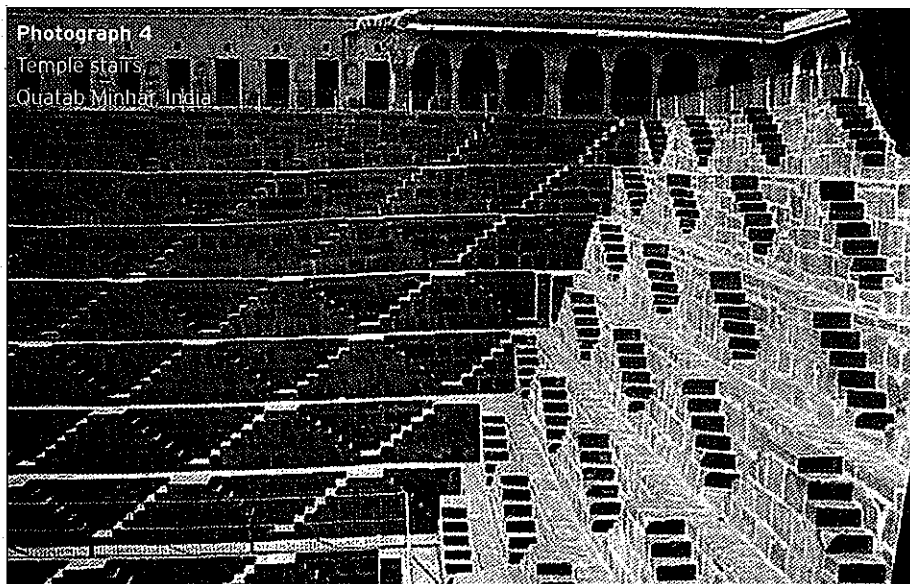
1. Without knowing the scale of the

stones shown in **photograph 2**, is it possible to compute the slope of the steps? If so, compute the slope. If not, explain why it is not possible.

2. Find the slope of five different sets of stairs in your school or neighborhood. Do the slopes tend to be the same? Is there any reason this may be desirable?
3. Estimate for what slope it would be difficult to walk down the steps while facing forward.
4. List several ways in which a handrail could be used to find the slope of a set of stairs.



Photograph 3
A trinity home in Philadelphia

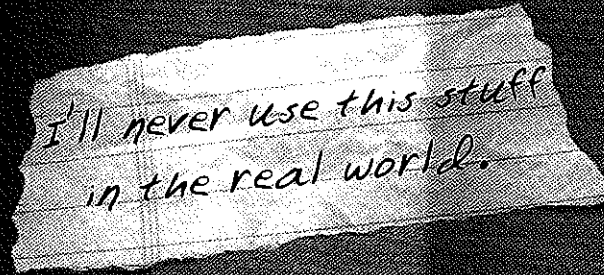


Photograph 4
Temple stairs, Quatab Minhar, India

5. Brigitte Bentele, the other co-editor of this department, recalls visiting friends in Philadelphia who lived in "trinity" homes. These homes typically have one room on each of three floors connected by a spiral staircase. The second step on the ground floor is often a little bit higher than all the other steps in

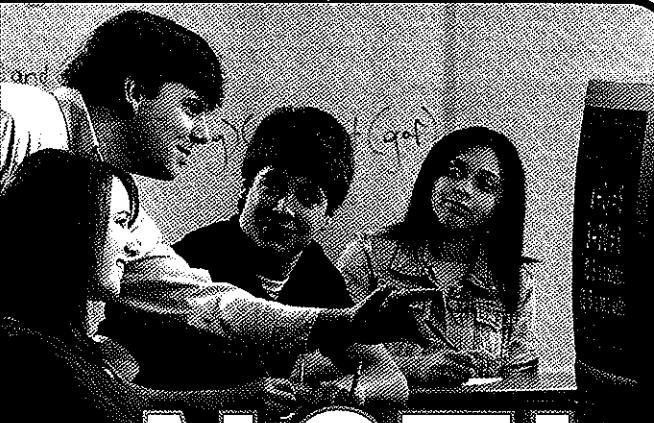
the home. Brigitte recently traveled to Philadelphia to take photographs of the stairs in a trinity home. **Photograph 3** gives some sense of the difference in rise of the steps. What could be a reason for making this step unequal to all the others? We hope this question doesn't trip you up.

6. Carol Jacques, Brigitte's friend from Philadelphia, was recently in Quatab Minhar, India, and took photographs of a highly intricate network of steps. **Photograph 4** offers a truly stunning and breathtaking view of these steps. What is the advantage of the architecture of these steps?




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